

Lampiran Peraturan Direktur Jenderal Perhubungan Udara
Nomor : *SKP/25/II/2008*
Tanggal : *21 Februari 2008*

Advisory Circular

120-CSEA 007

GUIDANCE FOR AIR OPERATORS ON THE ESTABLISHMENT OF A FLIGHT DATA ANALYSIS (FDA) PROGRAMME

REVISION :
DATE :

**REPUBLIC OF INDONESIA- MINISTRY OF TRANSPORTATION
DIRECTORATE GENERAL OF CIVIL AVIATION
JAKARTA - INDONESIA**

PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA
NOMOR : SKEP/25 / II /2008

TENTANG

ADVISORY CIRCULAR (AC) 120-CSEA 007
PEDOMAN BAGI OPERATOR PESAWAT UDARA UNTUK MENYIAPKAN
PROGRAM ANALISA DATA PENERBANGAN

DENGAN RAHMAT TUHAN YANG MAHA ESA

DIREKTUR JENDERAL PERHUBUNGAN UDARA,

- Menimbang :
- a. bahwa sesuai dengan Keputusan Menteri Perhubungan Nomor Km 22 Tahun 2002 tentang Persyaratan-persyaratan Sertifikasi dan Operasi bagi Perusahaan Angkutan Udara yang melakukan Penerbangan Dalam Negeri, Internasional dan Angkutan Udara Niaga Tidak Berjadwal telah diatur kewajiban operator pesawat;
 - b. bahwa berdasarkan pertimbangan sebagaimana dimaksud dalam huruf a, maka perlu ditetapkan Advisory Circular (AC) 120-CSEA 007 mengenai Pedoman Bagi Operator Pesawat Udara untuk menyiapkan program analisa data penerbangan, dengan Peraturan Direktur Jenderal Perhubungan Udara;
- Mengingat :
1. Undang-undang Nomor 15 Tahun 1992 tentang Penerbangan (Lembaran Negara Tahun 1992 Nomor 53, Tambahan Lembaran Negara Nomor 3481);
 2. Peraturan Pemerintah Nomor 3 Tahun 2001 tentang Keamanan dan Keselamatan Penerbangan (Lembaran Negara Tahun 2001 Nomor 9, Tambahan Lembaran Negara Nomor 4075);
 3. Peraturan Presiden Nomor 9 Tahun 2005 tentang Kedudukan, Tugas, Fungsi, Kewenangan, Susunan Organisasi dan Tata Kerja Kementerian Negara Republik Indonesia sebagaimana telah diubah terakhir dengan Peraturan Presiden Nomor 94 Tahun 2006;
 4. Peraturan Presiden Nomor 10 Tahun 2005 tentang Unit Organisasi dan Tugas Eselon I Kementerian Negara Republik Indonesia sebagaimana telah diubah terakhir dengan Peraturan Presiden Nomor 17 Tahun 2007;
 5. Keputusan Menteri Perhubungan Nomor T.11./2/4-U Tahun 1960 tentang Peraturan-Peraturan Keselamatan Penerbangan Sipil (CASR) sebagaimana telah diubah terakhir dengan Peraturan Menteri Perhubungan Nomor KM 4 Tahun 2006;
 6. Peraturan Menteri Perhubungan Nomor KM 43 Tahun 2005 tentang Organisasi dan Tata Kerja Departemen Perhubungan, sebagaimana telah diubah terakhir dengan Peraturan Menteri Perhubungan Nomor KM 37 Tahun 2006;

PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA
NOMOR : SKEP/25/7/2008

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Pasal 1

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Pasal 2

Peraturan ini mulai berlaku pada tanggal ditetapkan.

Ditetapkan di : Jakarta
Pada tanggal : *21 Februari* 2008

DIREKTUR JENDERAL PERHUBUNGAN UDARA

Ttd

BUDHI M SUYITNO
NIP. 120 088 924

SALINAN Peraturan ini disampaikan kepada :

1. Sekretaris Jenderal Departemen Perhubungan;
2. Inspektur Jenderal Departemen Perhubungan;
3. Sekretaris Direktorat Jenderal Perhubungan Udara;
4. Para Direktur di lingkungan Ditjen Hubud.

Salinan Sesuai dengan aslinya

KEPALA BAGIAN HUKUM
SESDITJEN HUBUD


RUDI RICHARDO
NIP. 120 154 783

MEMUTUSKAN :

Menetapkan : PERATURAN DIREKTUR JENDERAL PERHUBUNGAN UDARA TENTANG ADVISORY CIRCULAR (AC) 120-CSEA 007 PEDOMAN BAGI OPERATOR PESAWAT UDARA UNTUK MENYIAPKAN PROGRAM ANALISA DATA PENERBANGAN.

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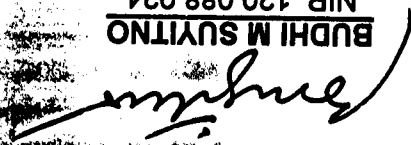
Pasal 2

Peraturan ini mulai berlaku pada tanggal ditetapkan.

Ditetapkan di : Jakarta

Pada tanggal : 01 Februari 2008

DIREKTUR JENDERAL PERHUBUNGAN UDARA



BUDI M SUYITNO
NIP. 120 088 924

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R/SKEP-ac 120-02/LI/18/JAN08

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FOREWORD

1. PURPOSE

This advisory circular provides information to air operators and DGCA staff on the requirements for the establishment of a Flight Data Analysis (FDA) programme.

2. REFERENCES

This Advisory Circular contains advisory material only and should be used in accordance with the applicable regulations.

3. CANCELLATION

None

4. REVISIONS

Revisions of this Advisory Circular will be approved by the Director General of Civil Aviation.

DIRECTOR GENERAL OF CIVIL AVIATION,

TTD

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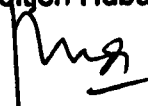
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APPENDIX A

1. PURPOSE

This advisory circular provides information to air operators and DGCA staff on the requirements for the establishment of a Flight Data Analysis (FDA) programme.

2. RELATED REGULATIONS

CASR 121 Subpart C
CASR 135 Subpart D

3. APPLICABILITY

Air operators should consider the information contained in this AC when developing their FDA programmes.

4. BACKGROUND

- a. Flight Data Analysis (FDA) programme, sometimes referred to as Flight Data Monitoring (FDM) or Flight Operations Quality Assurance (FOQA), is the pro-active and non-punitive programme for gathering and analyzing data, digitally recorded during routine flights to improve aviation safety. FDA programmes are a logical component of a mature safety management system. The use of this most important safety tool is growing as technology expands the capabilities of gathering and analyzing such data. The rate of accidents which occur in the arena of operations can be reduced by the proper application of FDA techniques in everyday airline operations, thus allowing flight operations occurrences to be analyzed and corrected on a day-by-day basis. The information and insights provided by FDA can improve safety by identifying safety hazards and enhancing training effectiveness, operational procedures, maintenance and engineering procedures, and air traffic control procedures.
- b. Recognizing the potential for accident prevention, ICAO has introduced requirements making a flight data analysis programme a part of an operator's accident prevention and flight safety programme. Operators of larger aircraft will be responsible for the operation of a non-punitive FDA programme. They may obtain the services of a specialist contractor to operate the programme.
- c. ICAO published amendment 26 to Annex 6 requiring that FDA programmes be established and utilized on aeroplanes, as from 1 January 2005, having a MCTOM greater than 27,000 kg. This weight discriminate has been retained for reasons of conformity and consistency with ICAO Annex 6 requirements.

5. SCOPE

The scope of this AC is to provide guidance material to DGCA staff and air operators which can be utilized to enable air operators to implement an effective Flight Data Analysis programme.

6. OBJECTIVES OF A FDA PROGRAMME

- a. To identify and quantify operational risks by highlighting when non-standard, unusual or unsafe circumstances occur;
- b. To use the FDA information on the frequency of occurrence, combined with an estimation of the level of severity, to assess the safety risks and to determine which may become unacceptable if the discovered trend continues;
- c. Put in place and monitor appropriate risk mitigation to provide remedial action once an unacceptable risk, either actually present or predicted by trending, has been identified; and
- d. To verify and optimize the effectiveness of training programmes and development of SOPs.

7. BASIC REQUIREMENTS OF A FDA PROGRAMME

- a. The manager of the accident prevention and flight safety programme, which includes the FDA programme, is accountable for the discovery of issues and the transmission of these to the relevant manager responsible for the process concerned. The latter is accountable for taking appropriate and practicable safety action within a reasonable period of time.

Note: While an operator may contract the operation of a flight data analysis programme to another party, the overall responsibility remains with the manager of the air operator's Flight Safety Programme.

- b. In a FDA program, data is collected from the aircraft using either special acquisition devices, such as Quick Access Recorders (QAR) or directly from the Flight Data Recorder (FDR). Using one of several available transmission methods, data is periodically retrieved and sent to the air operator's FDA office for analysis. This office usually resides within the

flight safety organization at the air operator. The data is then verified and analyzed, utilizing specialized processing and analysis software designed to convert the flight data into usable information.

- c. The analysis software extracts FDA events from the raw digital data stream based on parameters and associated threshold values (e.g., descent rate in excess of 1000 feet per minute on approach) that are specified by the air operator. Events are filtered by phase of flight. The analysis typically focuses on events that fall outside normal operating boundaries, as determined by the air operator's operational standards, as well as the manufacturer's aircraft operating limitations. The FDA office then reviews the events to assess their validity and their potential significance. FDA events are then marked for appropriate disposition.
- d. Unless the FDA event requires immediate action in the interest of safety, significant FDA events will be aggregated for further review by an oversight committee typically comprised of representatives from the appropriate air operator departments, such as flight operations, flight standards and training, and aircraft maintenance, as well as representative(s) of flight crews.
- e. Data that could be employed to determine flight crewmember identity are removed from the electronic record as part of the initial event extraction process. However, air operator FDA programs typically do provide for a crew liaison officer who is provided with a secure means of determining identity information. This will enable follow-up inquiry and feedback with a particular flight crew concerning a particular FDA event when needed for further insight into the circumstances surrounding an event. The crew liaison officer is someone who has the confidence of both crewmembers and managers for his/her integrity and good judgment. This person provides the link between fleet or training managers and flight crew involved in circumstances highlighted by FDA.
- f. Appendix A outlines typical events which could be included in an air operator's FDA programme.

APPENDIX A

**TYPICAL FDA PROGRAMME EXCEEDENCE DETECTION
AND ROUTINE PARAMETER ANALYSIS**

1. Traditional Event Set

These operational events are typical of those found in current programs and form an excellent starting point for any monitoring programme.

Event Code	Description	Event Group
01A	Vmo exceedence	Flight Manual Speed Limits
02A	Mmo exceedence	
03A	Flap placard speed exceedence	
03G	Gear down speed exceedence	
03I	Gear up/down selected speed exceedence	
04	Exceedence of flap/slat altitude	Flight Manual Altitude Limits
05	Exceedence of maximum operating altitude	
06A	Approach speed high within 90 sec of touchdown	High Approach Speeds
06B	Approach speed high below 500 ft AAL	
06C	Approach speed high below 50 ft AGL	
07A	Approach speed low within 2 minutes of touchdown	Low Approach Speed
08A	Climb out speed high below 400 ft AAL	High Climb-out Speeds
08B	Climb out speed high 400 ft AAL to 1000 ft AAL	
08C	Climb out speed low 35 ft AGL to 400 ft AAL	Low Climb-out Speeds
08D	Climb out speed low 400 ft AAL to 1500 ft AAL	
09A	Pitch rate high on take-off	Take-off Pitch
10A	Unstick speed high	Unstick Speeds
10B	Unstick speed low	
20A	Pitch attitude high during take-off	Pitch
20B	Abnormal pitch landing (high)	
20C	Abnormal pitch landing (low)	
21A	Excessive bank below 100 ft AGL	Bank Angles
21B	Excessive bank 100 ft AGL to 500 ft AAL	
21C	Excessive bank above 500 ft AGL	
21D	Excessive bank near ground (below 20 ft AGL)	
22D	Initial climb height loss 20 ft AGL to 400 ft AAL	Height Loss in Climb-out

Event Group	Event Code	Description
	22E	Initial climb height loss 400 ft to 1 500 ft AAL
Slow Climb-out	22F	Excessive time to 1000 ft AAL after take-off
High Rate of Descent	22G	High rate of descent below 2000 ft AGL
Normal Acceleration	23A	High normal acceleration on ground
	23B	High normal acceleration in flight flaps up/down
	23C	High normal acceleration at landing
	23D	Normal acceleration; hard bounced landing
-- Low go-around	024	Go-around below 200 ft
RTO	026	High Speed Rejected take-off
Configuration	40C	Abnormal configuration; speed brake with flap
Low Approach	042	Low on approach
Configuration	43A	Speedbrake on approach below 800 ft AAL
	43B	Speedbrake not armed below 800 ft AAL (any flap)
Ground Proximity Warning	44A	GPWS operation - hard warning
	44B	GPWS operation - soft warning
	44C	GPWS operation - false warning
	44D	GPWS operation - windshear warning
Margin to Stall	45A	Reduced lift margin except near ground
	45B	Reduced lift margin at take-off
	46A	Stickshake
	46B	False stickshake
Configuration	047	Early configuration change after take-off (flap)
Landing Flap	48A	Late land flap (not in position below 500 ft AAL)
	48B	Reduced flap landing
	48D	Flap load relief system operation
Glideslope	56A	Deviation under glides lope
	56B	Deviation above glides lope (below 600 ft AGL)
Buffet Margin	061	Low buffet margin (above 20,000 ft)
Approach Power	75A	Low power on approach

2. New Operational Event Program Triggers

In addition to the traditional events detailed above, there could be a number of new events used to detect other situations which an air operator may be interested in. Some of the new triggers are relatively simple to implement while others would need careful coding and research to avoid false events while still activating against good data.

Description	Notes
Engine parameter exceedence (e.g., TGT etc.)	One of a range of engine monitors
Full and free control checks not carried out	Essential pilot actions and a measure of control transducers.
Taxi out to take-off time - more than (x) minutes	Can be measured against a standard time for that airfield and runway.
High Normal Acceleration -Rough taxi-way	Detection along with an estimate of position derived from groundspeed and heading.
High Longitudinal Acceleration - Heavy braking	as above
Excessive Taxi Speed	as above
Take-off configuration warning	
Landing gear in transit longer than (x) seconds	To be used as an indicator of system problems and wear
Flap/slats in transit longer than (x) seconds	as above
Master Warning	All master warnings, even if false, heard by the crew are a useful indicator of distractions and "mundane/known problems".
Engine failure	To determine crew performance as well as help technical investigation.
Autopilot vertical speed mode selected below (x) ft	One of a range of auto flight system usage monitors
Fuel Remaining at landing below minimums	
Airborne holding - more than (x) minutes	
Excessive control movement - airborne (especially rudder)	This will indicate control problems that other events might not identify
TCAS warning	A must for monitoring future significant hazards and crew reactions
Reverse thrust not used on landing	
Auto ground spoiler not selected for landing	
Landing to shutdown time - more than (x) minutes	Indicates taxiway or stand allocation problems